SAMPLING
GENERAL SECTION 3

3.1 Random Sampling. Careful and judicious selection of a sample cannot be overemphasized. The sampler's responsibility is to secure a representative sample and take every precaution that it will remain representative until tested. The intent is always to obtain random samples that fully represent the characteristics of the material being sampled. Many materials are manufactured in identified lots/heats/groups, etc. indicating that the material is made and identified with the same criteria and should be uniform in character. In some cases, this can aid in sampling procedures.

3.1.1 If an inspector is presented with an entire lot of material "X" to look at and choose samples from, as may be the case in a warehouse, by using random sampling procedures there is assurance that the samples do, indeed, represent the character of that material. It is reasonable to report any part or all of that lot, on the basis of the random sample test results, at that time or later if the lot is believed to be uncontaminated and true. On the other hand, if the manufacturer made a lot of Brand "X" in Kalamazoo and the inspector is only allowed to see part of the lot at the fabrication shop in another location or on the construction job, as often happens with destination inspection, any sampling of that population is not a random sample of the entire lot. It is only a sample of that material lot that the manufacturer chose to send, i.e. a biased shipment. Therefore, it is not reasonable to assume that samples of the destination material represent the entire lot back at the factory or elsewhere, and a new shipment of the same lot requires new sampling. In the case where a shipment contains various lots or brands or other differentiation, it is not reasonable to assume that the sampling of one portion, is necessarily characteristic of the rest of the shipment.

3.1.2 In the true sense of random sampling, samples only represent that material which the inspector had access to at the time of sampling. Material arriving after sampling, regardless if it is a few minutes or days, is not a part of the sample population and is thus not technically represented. However, in a practical sense, sometimes it may be reasonable to assume that adjunct shipments of the same lot/heat/group are similar, when not unreasonably separated by time and interrupting manufacturing processes. Unless otherwise designated in sampling instructions, this may be considered an inspector determination provided uniform practices are followed and the highest calling is adhered to , i.e., uniform assurance of specification compliant and quality materials is mandated.

3.1.3 Inspectors are always within their right to sample per shipment or as necessary to assure quality and uniform materials. This manual generally sets up more specific criteria for various materials in order to provide some expectation of sampling/testing uniformity, both for the department as well as the supplier and the contractor. However, Sec 106 of the Standard Specifications, which is a part of the contractor and supplier contract with the department, clearly identifies that: a) the contractor is responsible for ordering quality material, b) all material is required to meet the quality requirements of the contract and be a uniform product, c) all materials must be approved by the engineer before use, d) material is subject to inspection and rejection at any point or time, prior to or after incorporation into the work, and e) the contractor has the responsibility to request inspection.

3.1.4 For liquids, container lids should be fastened tightly to prevent aeration or loss of any part of the sample. The outside of sample cans should be wiped clean after filling and before packaging for shipment to the Central Laboratory. In the case of liquid samples, approximately one-half inch [15 mm] of air space should be left between the top of the container and the surface of the liquid, otherwise, expansion during shipment may burst the container and cause loss of the sample.

3.2 Submission of Central Laboratory Samples.

3.2.1 Identification. A sample shall be properly identified by the creation of a SiteManager sample record (see AS-3510) and by properly attaching the associated sample identification number to the sample, and by providing any supplemental information which may be required for the specific material being submitted. Refer to the section of the Materials Manual that applies to the sample material to determine what supplemental information may be required and how it is to be provided. Complete and accurate information relative to the material represented shall be furnished to the Central Laboratory. This is essential in order to have the proper tests performed in the Central Laboratory and the results reported to the field. Each sample container must be marked with the proper identification number or have the appropriate tag or label attached. Do not place any identifying information on container lids.

3.2.2 Transportation of Samples. Samples must be securely wrapped and packaged to assure arrival in the Central Laboratory without damage. Metal cans may be packed in cardboard containers or wrapped with heavy paper. Plastic jugs may be packed in small cardboard boxes. Cloth sacks need no packaging but must be securely tied. Materials classified flammable or combustible for the purpose of shipping are listed in Table 1 of this Section and are to be packaged, labeled, and marked as required in Table 1. Examples of packaging and marking those materials are shown in Exhibits 1-C and 1-D of this Section. When shipping small sample containers, such as one-quart [1 L] cans, several may be packaged together to facilitate shipment. This practice is also desirable to minimize transportation costs.

Samples are to be shipped to:
Missouri Department of Transportation
Central Laboratory
1617 Missouri Boulevard
Jefferson City, Missouri 65109

Addressed shipping envelopes (Form T-658) are available for the sampler and shall be used. These envelopes may be tied or taped to the package and are desirable as the sample identification sheet may be inserted in the shipping envelope and accompany the sample. Samples of material submitted to the Central Laboratory should be sent by MoDOT trucks or by commercial bus, truck, or freight. Other means may be utilized if these modes are not available. The judgment of the district Operations Engineer will be relied upon to select the proper mode, taking into consideration the need for early test results, cost involved, and convenience.

3.2.3 Rush Tests. It is often necessary to receive Central Laboratory results as quickly as possible. Normally, rush tests should not be requested unless absolutely necessary. Samples should be sent as far in advance as possible of the time when the material represented will be needed. When a rush test is necessary, the sampler should be guided in marking the identification sheet, by the following instructions:

(a) If the material is needed for immediate use, mark the identification sheet "Rush - telephone results". The Central Laboratory will complete the test as rapidly as possible and telephone the proper party.

(b) For all other samples, no "Rush" marking is necessary. The Central Laboratory will complete the tests as soon as possible consistent with current work and report results in SiteManager.

3.3 Sampling Supplies. The type of container to be used will depend on the material being

sampled. Canvas material bags used for aggregate samples shall be clean and free from tears or holes. Metal and plastic containers shall be clean and dry to prevent any contamination.

The following supplies are available and may be obtained from the Central Laboratory in Jefferson City:

(a) Used canvas materials bags (when available).

(b) Plastic liners and small canvas bags for shipping cement samples.

(c) Ointment cans (3 and 6 ounce)[85 and 170 grams].

Other sampling supplies, such as new canvas material bags, containers, shipping envelopes, and identification sheets should be obtained from the District Office. These supplies are among the many items listed in the Catalog of Garage Stock Items issued by the General Services Division.

Only those supplies shown in Table 2 of this Section are to be used for packing and shipping materials listed in Table 1 of this Section

TABLE 1

LIST OF FLAMMABLE AND COMBUSTIBLE MATERIALS

MATERIALS SAMPLES	FLASH POINT, TCC, F [C]	PACKAGING	LABELS REQUIRED	MARKING
Asphalt, Cutback (RC)	0 [-18]	Two 1 qt. [liter] Metal Containers in approved box	Flammable Liquid This End Up	Asphalt, Cutback UN1999
Asphalt, Cutback (MC)	100 [38]	Two 1 qt. [liter] Metal Containers in approved box	This End Up	Asphalt, Cutback UN1999
Diesel Fuel	125 [52]	Two 1 qt. [liter] Metal Containers in approved box	This End Up	Fuel Oil, Diesel NA 1993
Gasoline	0 [-18]	Two 1 qt. [liter] Metal Containers in approved box	Flammable Liquid This End Up	Gasoline UN1203
Concrete Curing Compound	50 [10]	One qt. [liter] metal container in approved box	Flammable Liquid This End Up	Paint, Liquid UN1263

PAINT AND PAINT CONSTITUENTS

Alkyd Resin	50 [10]	1 qt. [liter] metal container in approved box	Flammable Liquid This End Up	Resin Solution UN1866
Driers	85 [29]	1 pt.[0.5 liter]metal container in approved box	Flammable Liquid This End Up	Paint Drier, Liquid UN1168
Methyl Alcohol	40 [4]	1pt. [0.5 liter] metal container in approved box	Flammable Liquid This End Up	Methyl Alcohol UN1230
Methyl Ethyl Ketone	16 [-9]	1 pt. [0.5 liter] metal container in approved box	Flammable Liquid This End Up	Methyl Ethyl Ketone UN1193

PAINT AND PAINT CONSTITUENTS (Continued)

MATERIALS SAMPLES	FLASH POINT, TCC, F [C]	PACKAGING	LABELS REQUIRED	MARKING
Mineral Spirits	104 [40]	1 pt. [0.5 liter] metal container in approved box	Flammable Liquid This End Up	Naphtha,Solvent UN1256
Naphtha	52 [11]	1 pt. [0.5 liter] metal container in approved box	Flammable Liquid This End Up	Naphtha UN2553
Paint	0 [-18]	1 qt. [liter] metal container in approved box	Flammable Liquid This End Up	Paint, Liquid UN1263
Paint, Multiple Component	0 [-18]	As specified in FS-1045, Table 1045-1	Flammable Liquid This End Up	Paint, Liquid UN1263
Paint Thinner/reducer	0 [-18]	1 qt. [liter] See Note 2	Flammable Liquid This End Up	Compound, Paint, Reducing or Thinning NA1142
Turpentine	91 [33]	1 pt. [0.5 liter]metal container in approved box	Flammable Liquid This End Up	Turpentine UN1299

Varnish	40 [4]	1 qt. [liter] metal container in approved box	Flammable Liquid This End Up	Paint, Varnish NA1263
Xylene (X4101)	81 [27]	1 pt. [0.5 liter] metal container in approved box	Flammable Liquid This End Up	Xylene UN1307

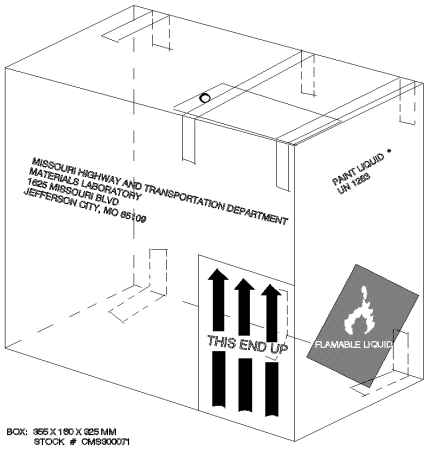
NOTE 1: Paint, paint constituents, and asphalt are not to be combined in the same package or with other materials. All materials shall be shipped in an approved outside container with sufficient cushioning and absorbent material. When materials are combined in the same package, label and mark according to the material with the lowest flash point. EXAMPLE: Alkyd Resin and Mineral Spirits. The labeling and marking to be used in this case would be: "Flammable Liquid," "This End Up" and "Resin Solution UN1866." Sufficient space must be allowed for expansion of liquid in containers. All containers shall be tightly closed and placed upright in the shipping carton.

NOTE 2: Multiple component paints are typically packaged in units. Each unit will include containers of each component packaged in the correct mixing proportions. When sampling this material, a unit may be ruined if each component is not sampled in the same proportions in which the unit was packaged. In this case, samples of each component should be obtained in the correct proportions providing that, when mixed, the combined components will create at least one quart of mixed paint for laboratory testing. Sampling containers should be compatible with the component being sampled. In most cases, lined, metal, friction-top containers are acceptable. Some activator components may require plastic sample containers.

TABLE 2
SUPPLIES REQUIRED FOR PACKAGING AND SHIPPING FLAMMABLE OR COMBUSTIBLE MATERIALS

APPROVED PACKAGING	STOCK NUMBER
Metal Containers	
Can, Friction Top, 1 pt. [0.5 liter][pheonolic lined]	CMS0236
Can, Friction Top, 1 qt. [liter][pheonolic lined]	CMS0088
Can, Screw Top, Round, 1 qt. [liter]	CMS0189
Can, Screw Top, Gas Sample	TUL0257
Clips, Closure, For Friction Top Cans	CMS0258
Cardboard Containers	
Carton, Sample, Concrete	CMS0279
Carton, Asphalt “new style”	CMS0056
Carton, Asphalt “old style”	CMS0218
Carton, Water, gallon	CMS0086
Tape, 3/4", [19 mm] 898 filament	STO0060

Cushioning - Use crumpled newspaper, paper toweling, rags, etc., to prevent movement and damage to inside containers during transit.



SHIPPING ENVELOPE TO BE TAPED
TO THE TOP OF BOX. DO NOT TAPE OVER
THE IDENTIFICATION NUMBER.
(Form T-658)

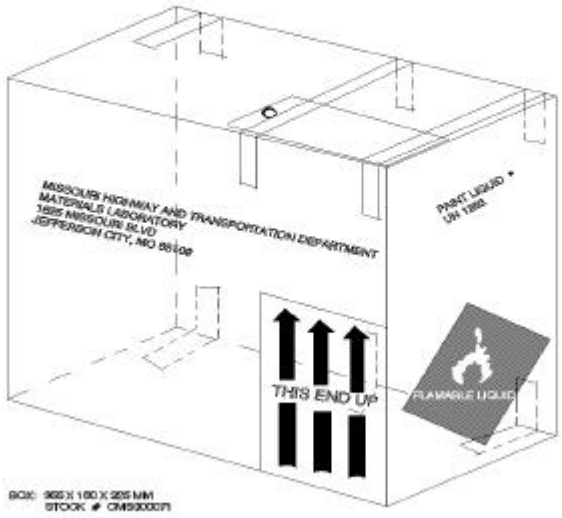
*MARKING SEE TABLE 1

FROM_____
_____
_____

IDENTIFICATION
NUMBER

TO
MISSOURI DEPARTMENT OF t\RANSPORTATION
1617 MISSOURI BOULEVARD
JEFFERSON CITY, MO 65109

TAPE: TO BE 3/4" (19 mm) WIDE NYLON
FILAMENT STOCK #STA.281948



*MARKING SEE TABLE 1

SHIPPING OF FLAMMABLE LIQUIDS
EXHIBIT 1-C